

Michigan Zoonotic & Vector-Borne Disease Surveillance Summary, 2013



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Reportable Zoonotic Diseases in Michigan

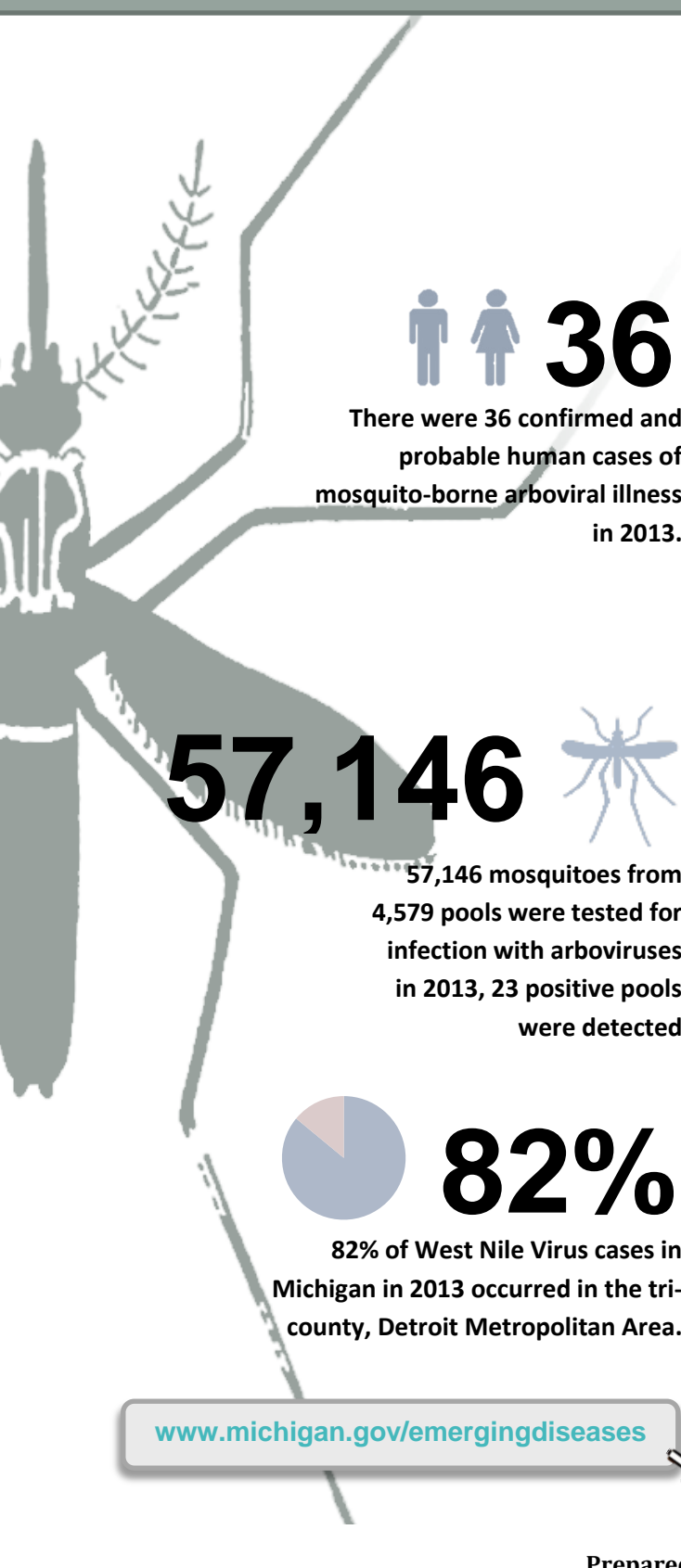
The list of reportable diseases in Michigan includes many diseases that are transmitted by animals and arthropods to people (see table below). The Michigan Department of Community Health, Zoonotic Disease and Special Projects Section is responsible for statewide human case surveillance and cooperates in multi-agency ecologic and animal case surveillance. The following report will focus on several of the diseases listed in this table including: Arboviruses, Lyme disease, and Rabies.

Zoonotic Diseases in Michigan – 5 Year Table

Disease	2009	2010	2011	2012	2013	Total
<i>Bird-Associated</i>						
Psittacosis	0	1	0	0	0	1
<i>Livestock-Associated</i>						
Anthrax	0	0	0	0	0	0
Q Fever, acute	1	4	7	3	1	16
Q Fever, chronic	0	2	1	0	0	3
<i>Mosquito Borne</i>						
Dengue Fever	6	9	6	9	16	46
Encephalitis, California (La Crosse)	0	2	1	0	0	3
Encephalitis, Eastern Equine	0	3	0	0	0	3
Encephalitis, St. Louis	0	2	0	0	0	2
Encephalitis, Western Equine	0	0	0	0	0	0
Malaria	32	34	35	26	23	150
West Nile Virus	1	29	34	202	36	302
Yellow Fever	0	0	0	0	0	0
<i>Multi-Mode Zoonoses</i>						
Brucellosis	10	4	1	1	0	16
Leptospirosis	0	0	1	0	1	2
Plague	0	0	0	0	0	0
Rickettsial Disease - Typhus	0	1	0	0	0	1
Tularemia	0	0	0	0	0	0
<i>Public Health Pest</i>						
Head Lice (Aggregate School Reporting)	2103	4063	5551	6855	6121	24693
<i>Rabies and Animal Bites</i>						
Animal Bite	2125	2388	3058	2801	2999	13371
Rabies, Animal	68	73	65	61	41	308
Rabies, Human	1	0	0	0	0	1
<i>Rodent Borne</i>						
Hantavirus	0	0	0	0	0	0
Hantavirus, Other	0	0	0	0	0	0
Hantavirus, Pulmonary	0	0	0	0	0	0
<i>Tick Borne</i>						
Babesiosis, <i>Babesia microti</i>	0	0	0	0	2	2
Ehrlichiosis, <i>Anaplasma phagocytophilum</i>	0	5	4	6	4	15
Ehrlichiosis, <i>Ehrlichia chaffeensis</i>	6	2	4	3	1	18
Ehrlichiosis, <i>Ehrlichia ewingii</i>	0	0	0	0	0	0
Ehrlichiosis, human other/undetermined	0	0	0	0	1	0
Encephalitis, Powassan	0	0	0	0	0	0
Lyme Disease	103	95	106	98	165	494
Rickettsial Disease – Spotted Fever	5	2	4	3	3	17
Total	4461	6719	8878	10070	9418	

Michigan Zoonotic & Vector-Borne Disease Surveillance Summary


Arboviruses



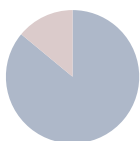
36

There were 36 confirmed and probable human cases of mosquito-borne arboviral illness in 2013.

57,146



57,146 mosquitoes from 4,579 pools were tested for infection with arboviruses in 2013, 23 positive pools were detected



82%

82% of West Nile Virus cases in Michigan in 2013 occurred in the tri-county, Detroit Metropolitan Area.

www.michigan.gov/emergingdiseases

In 2013, arbovirus activity in Michigan was relatively mild with 36 cases and 2 deaths reported, compared to 202 cases and 17 deaths in 2012. The same trend was apparent nationally, with a total of 2,469 human West Nile Virus (WNV) cases and 119 deaths reported. In comparison, a total of 5,674 human cases and 286 deaths occurred in the U.S. in 2012.

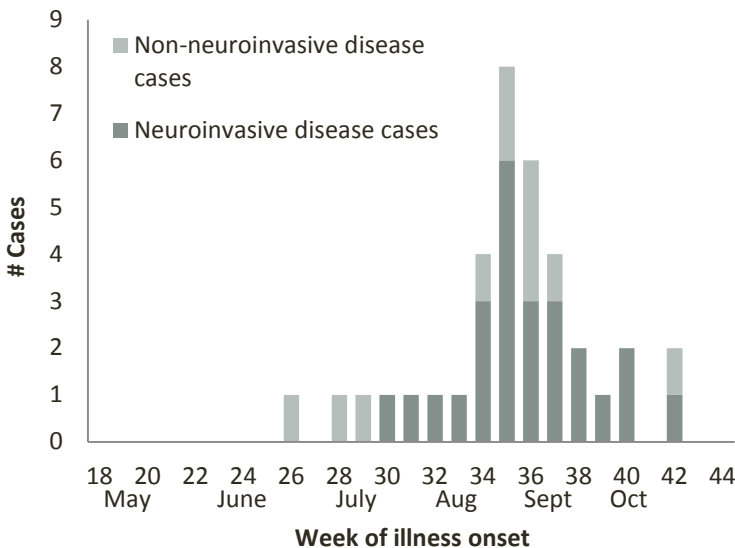
Wildlife disease surveillance conducted by the Michigan Department of Natural Resources detected the first ecologic evidence of WNV activity in the state again in 2013. A sick-acting wild turkey was collected in Gratiot County in mid-May. Bay County reported the first WNV positive mosquitos, collected in mid-July. The first confirmed human case was reported August 1, in a man from St. Joseph County.

A cool summer with plentiful rain events likely contributed to the mild arbovirus season in Michigan for 2013. Previous experience with WNV has shown that hot and dry conditions favor the WNV transmission cycle in the Midwest, providing ideal conditions for larval mosquito development in the stagnant water of retention ponds and urban and suburban catch basins. Hot, dry summers are associated with increased WNV activity in many species, including humans.

For 2014, in addition to Michigan's mosquito control districts, several of Michigan's local health departments will be conducting enhanced mosquito surveillance for WNV. This surveillance effort aims to educate citizens about increased WNV risk in the community, and personal protection measures when virus is detected. The Michigan Department of Community Health and its partners will continue to provide the public with timely information about WNV activity through regular updates to the Emerging Diseases website and other efforts, including press releases and media events.

2013 Arboviral Disease Data

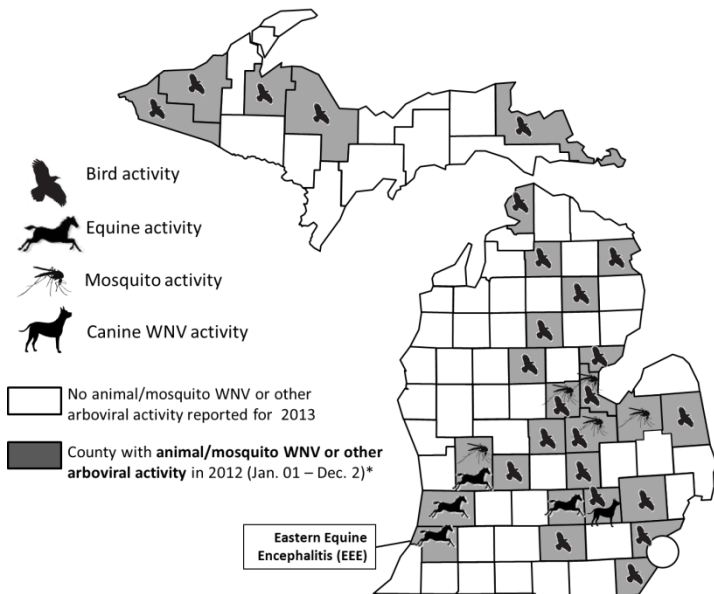
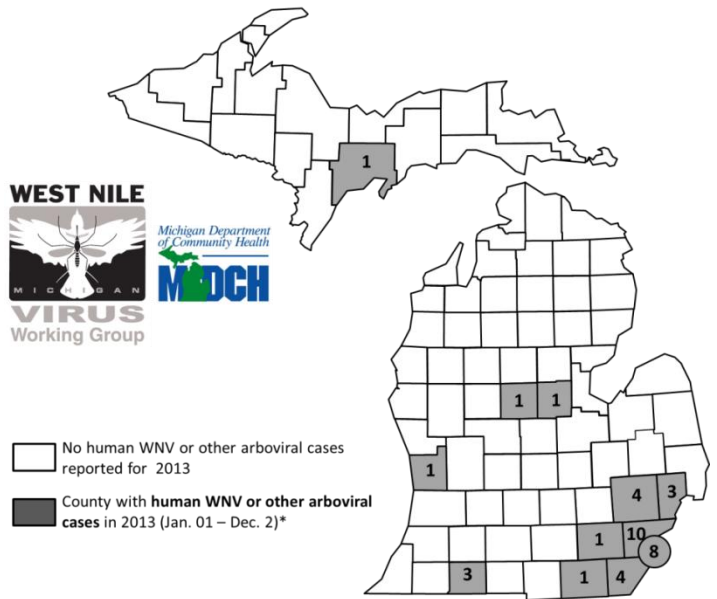
West Nile virus human disease cases by week of onset, Michigan, 2013



- In 2013, 36 human cases of WNV disease were reported, including two deaths.
- WNV was the only arbovirus detected causing illness in humans in 2013.
- The age range for Michigan WNV cases was 23–85 years with a median age of 59 years.
- 25 WNV cases (69%) were neuroinvasive (caused meningitis, encephalitis or paralysis).
- The case fatality rate for patients with neuroinvasive disease was 8%.
- Blood donor screening detected four donors with evidence of WNV in their blood at the time of donation. Of these, two became symptomatic.

West Nile virus (WNV) human cases reported in Michigan, 2013

- WNV cases were reported from 12 Michigan counties/jurisdictions.
- WNV case illness onset dates ranged from June 27 to October 15.
- Presumptive viremic blood donors were reported from four counties/jurisdictions; donation dates ranged from August 20 through October 6.
- Two deaths were reported, one each from Wayne County and the City of Detroit.
- The average age of those who died following WNV illness in 2013 was 67 years.

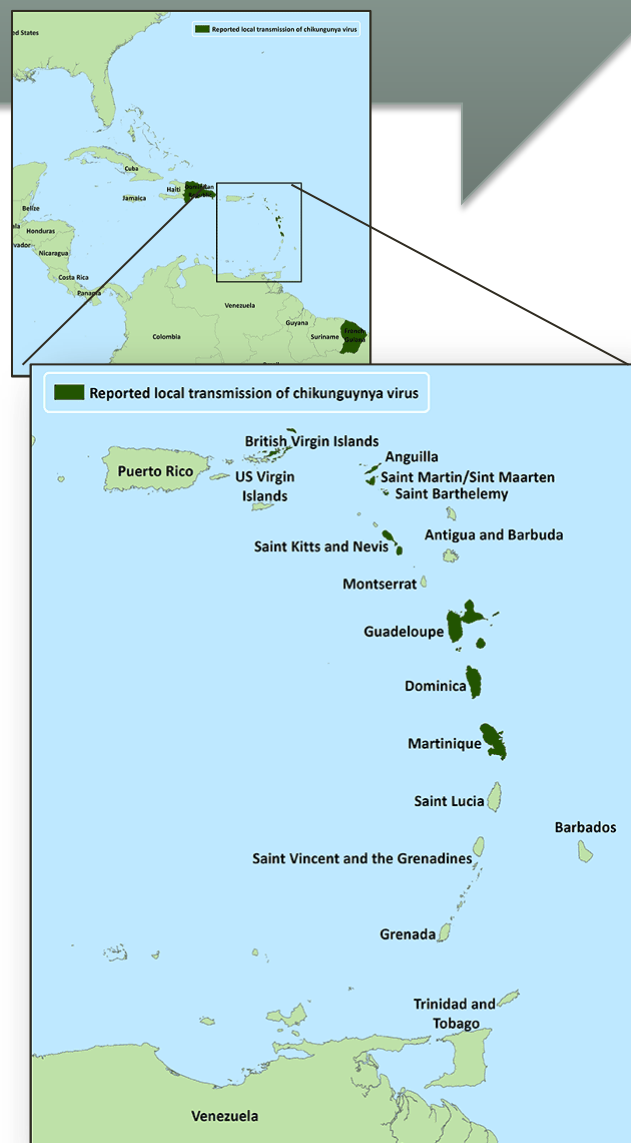


West Nile virus (WNV) and other arboviral ecologic activity reported in Michigan, 2013

- WNV was first detected in 2013 in a wild turkey in late-May.
- WNV ecologic activity was reported from 30 Michigan counties/jurisdictions.
- In total, 43 corvids and 18 other avian species tested positive for WNV in 2013.
- WNV positive mosquito pools were detected in Bay, Kent, Midland, Saginaw, and Tuscola counties.
- Three horses were diagnosed with WNV infection in 2013 from Allegan, Kent, and Ingham counties.
- An unvaccinated horse from Van Buren county was diagnosed with Eastern Equine Encephalitis (EEE).

Chikungunya: Emerging mosquito-borne disease in the Americas

- CHIKVungunya (CHIKVV) is a mosquito-borne virus in which humans are the reservoir host.
- Infection spreads between people through the bite of an infected mosquito. CHIKV is most often spread by *Aedes aegypti* and *Aedes albopictus* mosquitoes.
- Outbreaks of CHIKV have occurred in Africa, Asia, Europe and the Indian and Pacific Oceans.
- In late 2013, the first local transmission of CHIKV in the Americas was reported in some Caribbean countries and territories. CHIKV is new to the Americas and most people in the region are not immune.
- From 2006-2009, 106 CHIKV cases were identified in travelers visiting or returning to the United States. With the recent outbreaks in the Caribbean, the number of CHIKV cases in travelers visiting or returning to the U.S. is likely to increase.
- These imported cases could result in local introduction and spread of the virus in the U.S., as many states in the U.S. harbor the mosquitoes that transmit CHIKV.
- Michigan is currently not endemic for these mosquitoes, but that could change.
- The Centers for Disease Control and Prevention and Focus Diagnostics currently offer both serologic and RT-PCR tests for CHIKV diagnosis.
- CHIKV is currently not a nationally notifiable disease in the U.S., but healthcare providers are encouraged to report laboratory confirmed cases to state health departments or the CDC.



Chikungunya Resources

CDC

- Travel Notices: <http://wwwnc.cdc.gov/travel/notices/watch/chikungunya-saint-martin>
- CDC Health Advisory, 12/13/2013: Notice to Public Health Officials and Clinicians: Recognizing, Managing, and Reporting Chikungunya Virus Infections in Travelers Returning from the Caribbean: <http://emergency.cdc.gov/HAN/han00358.asp>
- CHIKV website at <http://www.cdc.gov/chikungunya/geo/americas.html>, updated regularly

PAHO

- Chikungunya in the Americas Updates: http://www.paho.org/hq/index.php?option=com_content&view=article&id=9053&Itemid=39843
- 'Guidelines for Preparedness and Response for Chikungunya Virus Introduction in the Americas'

What Can Be Done?

Public Health Agencies can

- Monitor Michigan's mosquito populations
- Maintain a surveillance system for arboviral diseases
- Make Michigan data publicly available
- Promote arbovirus disease prevention guidance

Health Providers can

- Review public health data regarding the risk of arboviruses in Michigan
- Diagnose and treat infections using best practices
- Report cases promptly to your local health department
- Remind patients about the risk of arbovirus infection in your area and ways to prevent infections

Special Project

Beginning in June, 2014, several health jurisdictions including Kent, Macomb, Wayne, and Washtenaw will be participating in an ELC funded enhanced mosquito surveillance project. Health departments will place 5-10 traps in their jurisdiction and use the field-expedient VectoR Test on *Culex* species mosquitoes to detect WNV in samples. Information gathered from the project will help to alert local communities of increased WNV risk, and help promote personal protective measures and local mosquito control options.

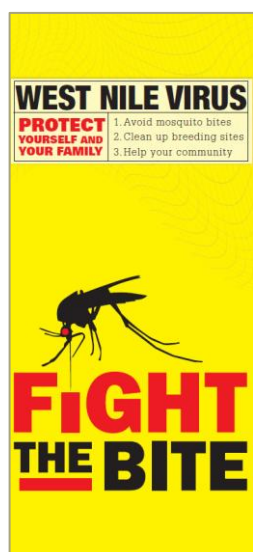
Everyone can

- **Inform** yourself about where risk for contracting arboviruses is greatest (lack of reported activity ≠ lack of risk however)
- **Inform** yourself about when the risk for contracting arboviruses is greatest:
 - ✦ Summer
 - ✦ At dusk and dawn, mosquitoes are most active
 - ✦ Adults > 50 years of age are more susceptible to serious illness from WNV
 - ✦ Children < 15 years of age are more susceptible to serious illness from EEE and La Crosse encephalitis virus.
- **Eliminate** standing water where mosquitos can lay eggs
- **Report** dead birds to your local authorities
- **Protect.** Take precautions to prevent mosquito bites when engaging in outdoor activities



GUIDES AND PRINTED RESOURCES

Posters, pamphlets, and guides are available to download, print and order at <http://www.michigan.gov/westnile> - library. Printed "Fight the Bite" pamphlets will be made available to local health departments at no charge. Please call MDCH Division of Communicable Disease to order these materials at 517-335-8165.



[Learn More](#)



MDCH West Nile Virus Website:

<http://www.michigan.gov/emergingdiseases>

Centers for Disease Control and Prevention West Nile Virus Website:

<http://www.cdc.gov/ncidod/dvbid/westnile/index.htm>

Michigan Zoonotic & Vector-Borne Disease Surveillance Summary

Rabies

3.6%



Percent of bats submitted to the State Laboratory for rabies testing that were infected with rabies.

August

The highest bat submission rate occurred in August, corresponding with increased juvenile bat activity. This is when most potential human exposures occur.



3,204

Over 3,000 animals were submitted for rabies testing in 2013.

Rabies is a preventable viral disease of mammals most often transmitted through the bite of a rabid animal. In Michigan, the majority of reported cases each year occur in wild animals like bats, skunks, and foxes.

The rabies virus infects the central nervous system, ultimately causing disease in the brain and death. Exposure to the virus occurs when saliva from an infected animal contaminates broken skin or mucus membranes. Rabies is not transmitted through exposure to blood, urine, or feces of an infected animal.

Another possible exposure occurs when bats are found in rooms with sleeping individuals. In these cases, it is important not to let the bat go before consulting the local health department to determine if the bat should be tested for rabies.

Between January 1, 2013 and December 31, 2013, the Michigan Department of Community Health's Bureau of Laboratories (MDCH BOL) received 3,204 specimens for rabies testing, of which 3,028 could be tested. Of these, 40 (1.3%) were positive for rabies. An additional rabies positive bat collected in Michigan was reported by the Illinois Department of Public Health. Bats were the only species detected with rabies in Michigan for 2013.

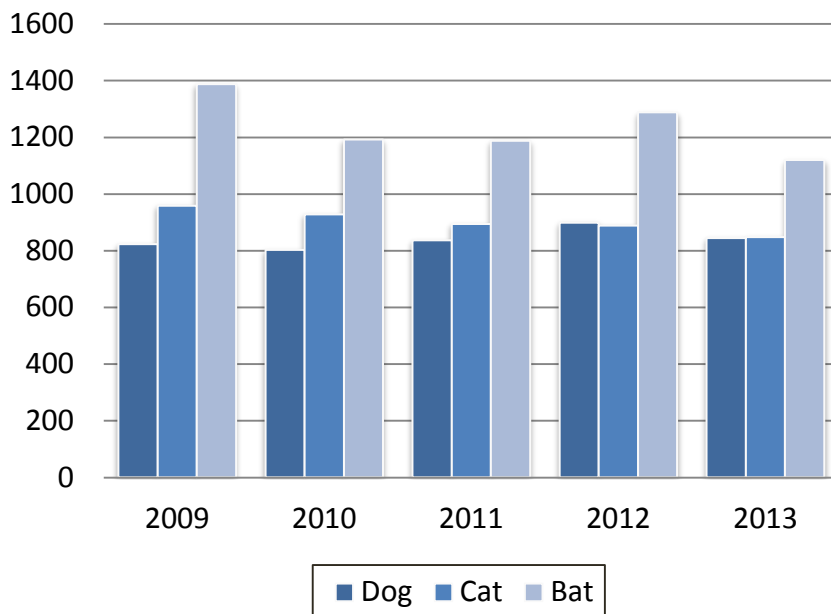
In comparison, in 2012, 3,342 animals were tested for rabies at MDCH BOL. Of these, 58 (1.7%) were positive for rabies, including 51 bats, six skunks and one fox. An additional rabid bat and two rabid skunks were detected through wildlife surveillance testing conducted by the United States Department of Agriculture's Wildlife Services.

www.michigan.gov/emergingdiseases



2013 Rabies Data

Species Commonly Tested for Rabies in Michigan

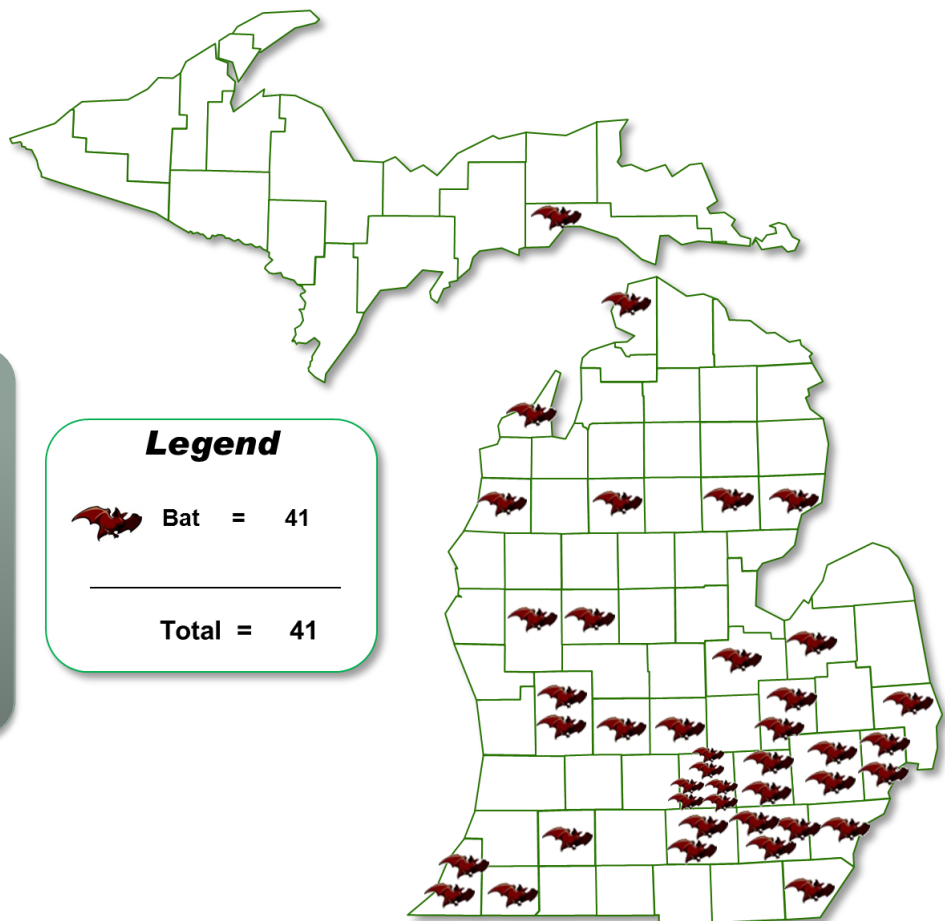


- 3,028 animals were tested for rabies by the MDCH Bureau of Laboratories.
- Bats were the most frequently tested animal (1,119) followed by 847 cats, and 844 dogs.
- Michigan reported a total of 41 rabies-positive animals in 2013, 20 fewer than in 2012.
- Bats were the only animal species detected with rabies in Michigan in 2013.
- Of the 1119 bats that were tested at MDCH, 40 were positive for rabies. An additional MI bat was tested positive by the Illinois Department of Health

The map at right shows the location and species of rabies-positive animals in 2013.

Bats were the most frequently submitted species and 3.6% were rabies positive.

Relatively few skunks (17) were tested for rabies at MDCH BOL in 2012, and none were positive. In contrast, in 2012, 35 skunks were tested and six (17%) were rabies positive.



Special Projects

Bat Identification Project

Tracking Bat Submissions: 2008-2013

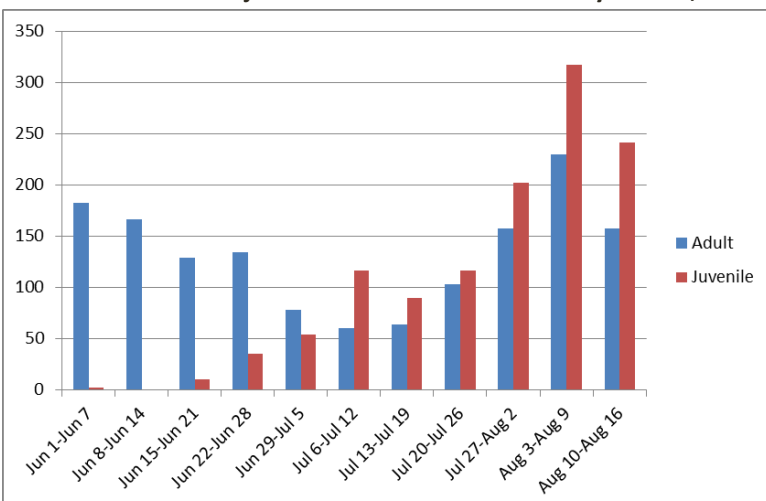
Summary

- Since 2008, MDCH, MDNR, and Dr. Allen Kurta, a bat researcher at Eastern Michigan University have collaborated on an ongoing bat identification project.
- The purpose of the project is to track trends and determine if factors such as age influence the submission of bats for public health testing.
- Through this study we can also see which species are most commonly encountered by people as well as obtain temporal and spatial data on less commonly encountered bats (Table 1).

TABLE 1. Bat species submitted to DCH for rabies testing during 2008-2013

Species	Total	% Total
Big brown bat (<i>Eptesicus fuscus</i>)	7585	94.20%
Little brown bat (<i>Myotis lucifugus</i>)	368	4.57%
Red bat (<i>Lasiurus borealis</i>)	28	0.35%
Northern bat (<i>Myotis septentrionalis</i>)	19	0.24%
Silver-haired bat (<i>Lasionycteris noctivagans</i>)	17	0.21%
<i>Myotis</i> sp.	15	0.19%
Hoary bat (<i>Lasiurus cinereus</i>)	13	0.16%
Unknown	5	0.06%
Eastern pipistrelle (<i>Perimyotis subflavus</i>)	2	0.02%
Total	8052	

FIGURE 1: Adult vs. juvenile submissions to DCH by month, 2013



Adult vs. Juvenile Bats

Most bats are born in May/June. After the first week in July, juveniles outnumber adults among bats submitted for rabies testing. This corresponds with the time when these young bats begin to leave the roost on their own (Figure 1).

Juvenile Big Brown Bat
© Garden State Wildlife Control

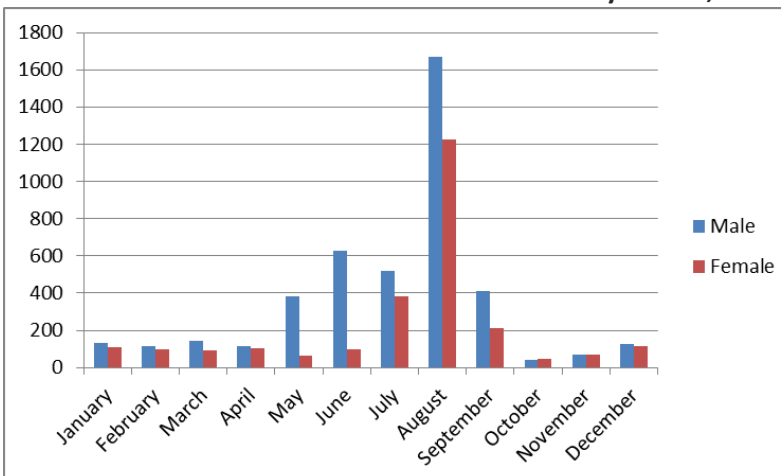


Male vs. Female Bats

For DCH bat submissions, males outnumber females during most months (Figure 2). Dr. Kurta previously observed this trend in a 1970's survey of DCH bats. The most likely explanation for this observation is that male bats are longer lived than female bats and are thus more frequently encountered.

Information for the bat identification project provided by Julie Melotti, MS, MI Department of Natural Resources.

FIGURE 2: Male vs. female submissions to DCH by month, 2013



What Can Be Done?

Public Health Agencies can

- Maintain a rabies surveillance system
- Provide rabies testing services to the public
- Provide consultation to health care providers and the public
- Make Michigan data publicly available
- Maintain relationships with animal control and animal health organizations
- Promote rabies prevention

Veterinarians can

- Vaccinate pets and livestock against rabies
- Educate your clients and the public about rabies prevention
- Ensure your rabies titers remain at protective levels

Health Care Providers can

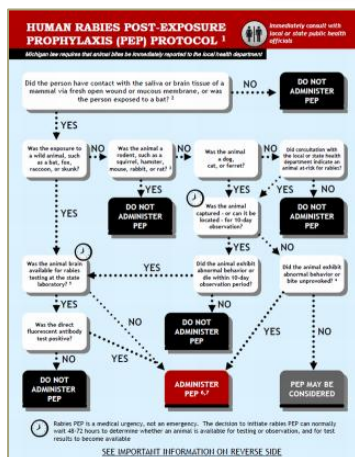
- Review epidemiology of rabies in Michigan
- Treat potential exposures using best practices
- Report animal bites to your local health department

Everyone can

- **Vaccinate** your pets against rabies and keep them up to date
- **Avoid** contact with wild or unfamiliar animals
- **Know** what to do if you find a bat in your home
- **Keep** a list of important phone numbers that includes animal control and your local health department
- **Seek** prompt medical care if you are bitten by an animal

GUIDES AND PRINTED RESOURCES

MDCH developed a poster that reminds people not to touch bats and to try to safely capture any bat found in the home until determining if rabies testing is advised. Frequently, bats found in the home are immediately released upon discovery. In many of these cases, without a specimen to test for rabies, household members have to undergo costly rabies post-exposure prophylaxis treatment. The poster is available to Michigan local health departments, and can be customized with local contact information. It may be found at www.michigan.gov/emergingdiseases.



Full-color, printed copies of the MDCH human rabies post-exposure prophylaxis protocols are available for order. Use the CD Division publication order form at: www.michigan.gov/cdinfo

Learn More

MDCH Rabies Website:

<http://www.michigan.gov/emergingdiseases>

Centers for Disease Control and Prevention Rabies Website:

<http://www.cdc.gov/rabies>

National Association of State Public Health Veterinarians Rabies Compendium:

<http://www.nasphv.org/Documents/RabiesCompendium.pdf>

Maryland's Rabies Post-exposure Prophylaxis Basics Training for Healthcare Providers (CE available):

<http://ideha.dhmv.maryland.gov/training/SitePages/rabies.aspx>

New York's bat-capture instructional video:

http://www.health.ny.gov/diseases/communicable/zoonoses/rabies/docs/catch_the_bat_high.wmv

Michigan Zoonotic & Vector-Borne Disease Surveillance Summary

Tick-Borne Disease including Lyme disease

165



There were 165 confirmed and probable cases of Lyme disease reported in 2013, an increase of nearly 66% from 2012.



50%

Half of cases with a reported onset date occurred by mid-July. This peak of cases coincides with the activity of the poppy-seed sized nymphal stage tick.



24 to 48



Removing ticks within 24 to 48 hours of attachment greatly reduces the risk of contracting Lyme disease.

Lyme disease continues to be the most commonly reported vector-borne disease in the United States; over 30,000 cases were reported nationally in 2012¹. In the U.S. cases tend to be geographically focused in the northeastern and north-central United States, but Lyme disease is also endemic and expanding in Michigan. In 2013, 165 human cases were reported with most Michigan exposures occurring in the Upper Peninsula and western Lower Michigan.

The tick vector, *Ixodes scapularis* (Blacklegged tick), is now endemic in the western Lower Peninsula along Lake Michigan, and the highest tick populations occur among coastal communities. Although rare, *I. scapularis* is also responsible for transmitting other diseases to humans including anaplasmosis, Babesiosis and a recently discovered novel Ehrlichia species (see special projects report) in Michigan.

In 2013, MDCH staff conducted human case surveillance, tick field investigations, and surveys of the public, recreational parks staff, and physicians. In 2014 staff will continue to conduct completeness reviews of Lyme disease case follow-up investigations and report annual findings to the public. Additionally, MDCH plans to continue field ecologic surveillance for blacklegged ticks in the state with the help of its partners, including Michigan State University, Michigan's Departments of Natural Resources, and Agriculture and Rural Development. Educational materials will continue to be updated and made available to the public via the MDCH "Emerging Diseases" Website.

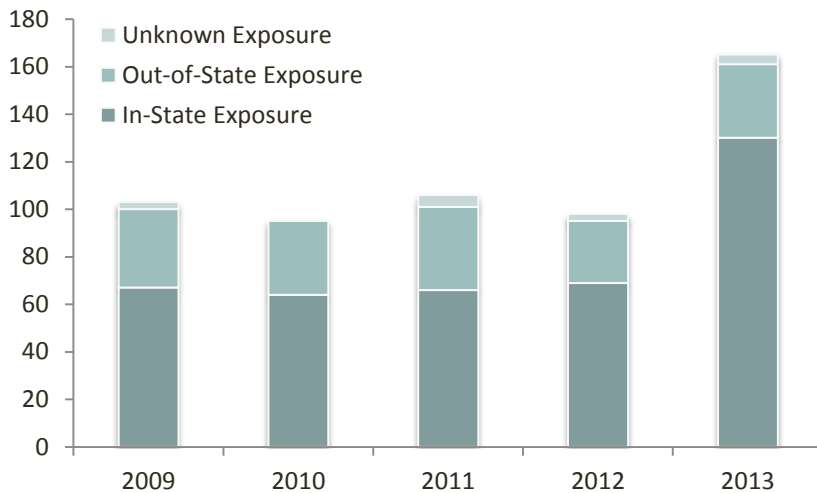
www.michigan.gov/emergingdiseases



¹Source: CDC Reported cases of Lyme disease by state or locality, 2003-2012.

2013 Lyme Disease Data

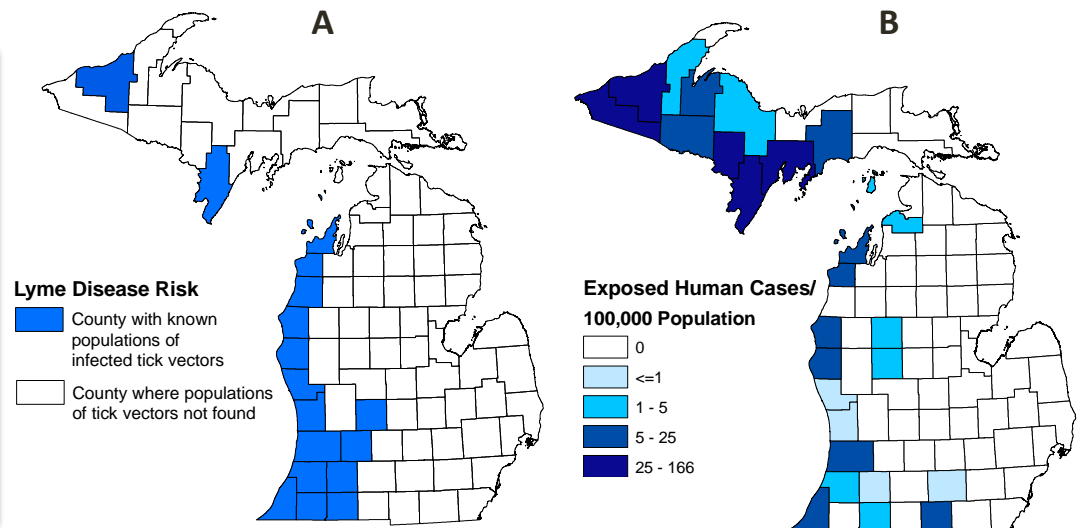
Michigan Lyme Disease Cases by Year, 2009--2013



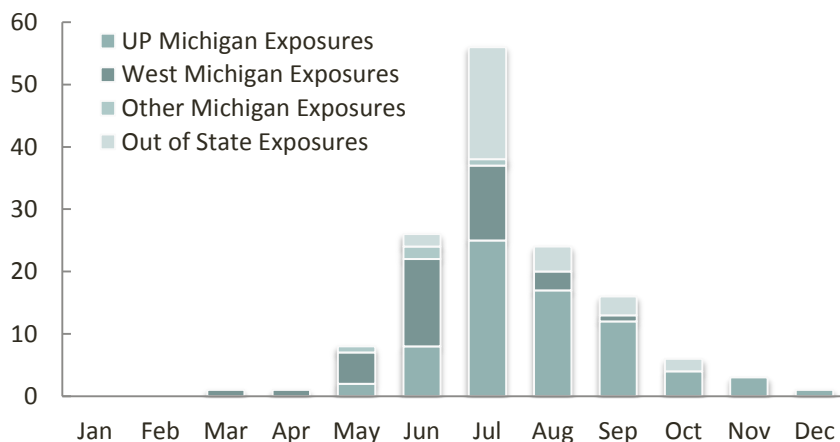
- A total of 165 probable and confirmed cases were reported to MDCH in 2013, an increase of almost 60%.
- One hundred thirty patients reported potential exposure in Michigan.
- The incidence rate in Michigan for 2013 was 1.32 cases per 100,000 persons.
- Incidence rates for 2013 differ between the Upper Peninsula (28.46 cases per 100,000 persons) and the western Lower Peninsula (1.83 cases per 100,000 persons).

The maps at right highlight Michigan counties by Lyme disease human case incidence and potential risk based on known populations of vectors.

- A) Counties with blacklegged tick populations identified by field researchers.
- B) Incidence of locally exposed Lyme disease cases (ie. cases exposed in county that is shaded) in 2013.



MI Lyme Disease Cases by month of onset, 2013



Human case onset dates coincide with tick activity:

Adult ticks often have the highest infection rate and are active in the early-spring and the fall, generally at temperatures above 45°F. Because of their large size they are more easily detected.

Nymphal ticks are responsible for a majority of human Lyme disease due to their small size (difficult to notice and remove promptly) and are active during the warmer months (May-August) when people are recreating and working outdoors.

Special Projects

A Novel Pathogen: *Ehrlichia muris*-like (EML)

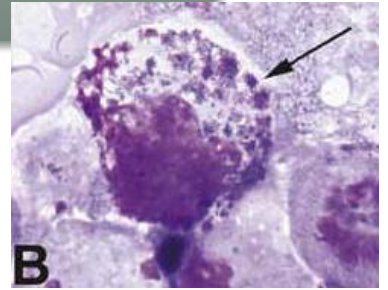
Ehrlichia muris-like (EML) disease was identified in a Michigan patient in 2013. While it was not-confirmed that the patient was exposed in Michigan, evidence points to significant tick exposure locally in the Upper Peninsula.

EML was first discovered in 2009 in Wisconsin and is considered an emerging tick-borne disease in the Upper Midwest. The tick vector for the EML organism is *Ixodes scapularis* (the blacklegged or deer tick). *Ehrlichia muris*-like disease is related to another emerging tick-borne disease in Michigan transmitted by the blacklegged tick called anaplasmosis.

Physicians in regions where blacklegged ticks are common in Michigan should be aware of the potential for EML or Anaplasmosis illness in their area. Symptoms may occur from one to three weeks after tick bite. Some individuals may experience only mild symptoms, or remain asymptomatic. Most patients, however, will experience fever, headache, chills, malaise, and muscle pain. Less frequent symptoms may include nausea/vomiting/diarrhea, confusion, conjunctival injection, rash (in up to 60% of children, less than 30% of adults), joint pain, or rigors.

If not treated, anaplasmosis and ehrlichiosis can result in serious illness, and can occasionally be fatal. Signs of severe illness may include difficulty breathing, hemorrhage, renal failure, or neurologic manifestations. Ehrlichiosis tends to be more severe than anaplasmosis.

The local health department and the Michigan Department of Community Health plan to conduct follow-up ecologic investigations.

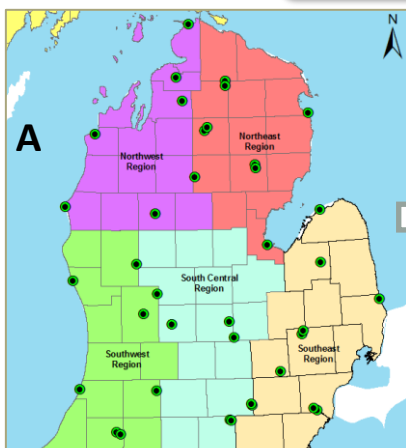


Above: Intracellular morulae of *E. muris*-like. Published in: Pritt *et al.* N Engl J Med. 2011 August 4; 365(5): 422–429. **Below:** *Ixodes scapularis* nymph on a human fingernail. Photo: Graham Hickling

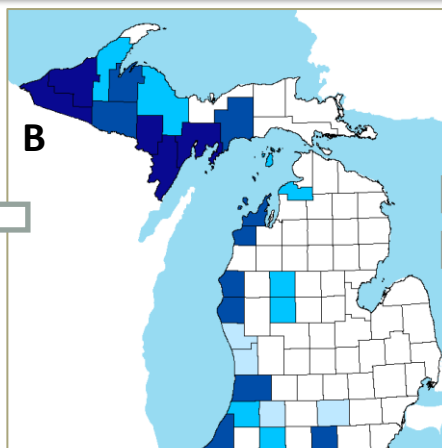


Field Surveys and Risk Determinations

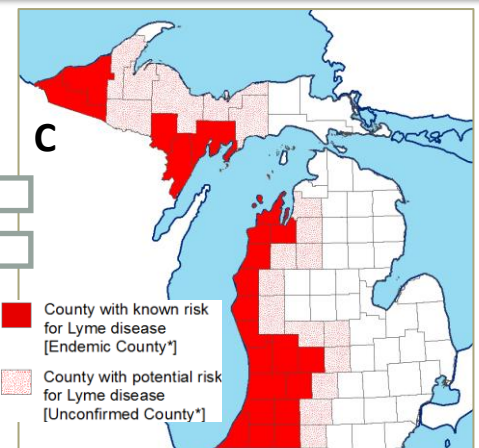
Field surveys are planned for 2014 to determine the entomological risk index (ERI) for Lyme and other tick-borne diseases at sites within and outside of Michigan's known blacklegged tick endemic regions. The ERI is the number of infected ticks a person would encounter over 1000m². This field survey information (A below) is combined with reports of confirmed human cases of Lyme disease (B below), and investigations into human Lyme disease case exposure to ticks locally, to create the Michigan Lyme Disease Risk Map (C below).



Information regarding blacklegged tick collections from the environment.....



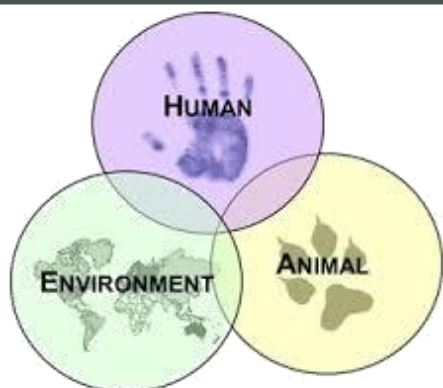
....is combined with information regarding multiple LOCAL exposures to Lyme disease....



....to create Michigan's Lyme disease risk map.

2013 Michigan Zoonotic & Vector-Borne Disease Surveillance Report ■ www.michigan.gov/emergingdiseases

Michigan Zoonotic & Vector-Borne Disease Surveillance Summary



One Health Initiatives

One Health is the integrative effort of multiple disciplines working locally, nationally, and globally to attain optimal health for people, animals, and the environment. Together, the three make up the One Health triad, and the health of each is inextricably connected to the others in the triad. Understanding and addressing the health issues created at this intersection is the foundation for the concept of One Health.

One Health Webinar Series

In July 2013, MDCH began a quarterly series of webinars on One Health topics. These one hour webinars are geared towards local health departments and other public health partners. Webinar topics to date have included:

- West Nile Virus and Lyme Disease: Getting the most out of case reports (July 2013)
- Bed Bugs: What is working in pest management, and can we apply this at the community level? (October 2013)
- Rabies 101: One Health in Action (January 2014)
- Spring Chicks and Biting Ticks (April 2014)

Slides from past presentations and a recording of the rabies webinar are available through the Emerging Diseases [website](#).

The next One Health webinar will be held Tuesday, July 15, 2014 at noon. The topic will be **Bats in Michigan**, featuring presenters from MDNR, EMU, and MDCH.

Suggestions for future One Health topics are welcome, and may be sent to signsk@michigan.gov or fostere@michigan.gov.

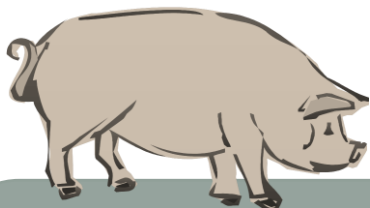


Animals in Public Settings Compendium

Did you know that there is a comprehensive guide for preventing disease transmission between humans and animals in fairs, petting zoos, and other public settings? Download the Compendium of Measures to Prevent Disease Associated with Animals in Public Settings from

<http://www.nasphv.org/Documents/AnimalContactCompendium2013.pdf>





Swine Influenza

Human infections with novel or variant influenza viruses continue to be seen nationwide, including in Michigan. Novel influenza infections in humans are nationally reportable and refer to any human infection with a non-seasonal influenza virus. When these infections are due to an influenza virus of swine origin, they may be referred to as a "variant" virus (e.g. H3N2v). Since 2011, over 300 human infections with an H3N2v influenza virus have been confirmed nationwide, including eight in Michigan. The majority of variant influenza virus infections have been associated with exposure to fairs and agricultural events, including both direct and indirect contact with swine. Both children and adults comprised the eight Michigan cases, which occurred in association with four Michigan county fairs and one Ohio fair during the summers of 2012 and 2013.

It is important for healthcare providers and local health departments to continue investigating influenza-like illness cases during the summer months, including asking patients about potential animal exposures and travel history and performing influenza laboratory testing. Local health departments are encouraged to establish communications with their local fair officials to facilitate prompt recognition, reporting and follow-up of any illness clusters. Please contact MDCH at (517) 335-8165 with any questions or for more information.

Resources:

MDCH Influenza guidance documents: www.michigan.gov/cdinfo

Michigan Influenza website: www.michigan.gov/flu

CDC H3N2v main webpage: www.cdc.gov/flu/swineflu/h3n2v-cases.htm

Directory of Michigan Fairs: http://mafe.info/?page_id=109

New Bed Bug Resource

MDCH has partnered with MSU Extension to develop a new booklet for homeowners who might be dealing with bed bugs. The booklet, entitled "Getting the Bed Bugs Out: A guide to controlling bed bugs in your home" is now available on our website at <http://www.michigan.gov/bedbugs>.

The booklet provides useful advice on steps and techniques for bed bug control in a home environment, with an emphasis on pesticide safety. It offers step-by-step instructions for inspecting, preparing, and treating a home for bed bugs.



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